

REMARKS

Claims 13-32 have been amended. Claims 13-32 remain for further consideration. No new matter has been added.

The Official Action is taken up in order as follows:

1-3. The drawings currently stand objected to due to several informalities.

Replacement drawings sheets are submitted herewith and the specification has been amended for consistency with the drawings.

4. The specification currently stands objected to due to two informalities.

The specification has been corrected to correct the informalities.

5. Claim 27 currently stands objected to due to an informality.

Claim 27 has been amended to correct the informality.

6-20. Claims 13-21, 24-26 and 29-32 currently stand rejected as allegedly being obvious over the combined subject matter is U.S. Patent 4,182,930 to Blackmer (hereinafter “Blackmer”) and U.S. Patent 4,000,370 to Smith et al. (hereinafter “Smith”).

Claim 13

Amended claim 13 recites a method for processing an audio signal. The method includes the steps of:

“band-limiting the received audio signal to generate a first intermediate signal;

multiplying the first intermediate signal by a correction factor to generate a second intermediate signal;

amplifying the second intermediate signal by an amplification factor to generate a third intermediate signal;

limiting the amplitude of the third intermediate signal to a predetermined value to generate a fourth intermediate signal;

providing the correction factor as a feedback signal that is a function of the third intermediate signal;

band-limiting the fourth intermediate signal to generate a fifth intermediate signal; and

adding the fifth intermediate signal to the received audio signal.” (cl. 13, emphasis added).

Claim 13 has been amended to include the feature of “*providing the correction factor as a feedback signal that is a function of the third intermediate signal.*” Support for this amendment is in the specification and drawings as filed. (See, for example, each of FIGs. 1-4). It is respectfully submitted that nowhere in Blackmer or Smith is there disclosure or suggestion of this feature.

Upon a fair and proper reading, Blackmer discloses that the third intermediate signal (FIG. 2) is identified by reference number 52 and is generated by amplifying the second intermediate signal 24 by an amplification factor. The third intermediate signal 52 is then band-limited to generate a fourth intermediate signal 54. In Blackmer, a *feed-forward* (and not a *feedback*) connection exists from the output of the low-pass filter 38, through a series connection of a high-pass filter 44, a level detector 46, a non-linear capacitor 48, and a control amplifier 50, then on to the gain control device 24. However, this is very different from the added feature of amended claim 13; specifically, of “*providing the correction factor as a feedback signal that is a function of the third intermediate signal.*” As Blackmer does not disclose a feedback signal, and thus of course Blackmer also does not disclose a feedback signal that is a function of the third intermediate signal. Further, upon a fair and proper reading, Smith also fails to disclose or suggest in any manner whatsoever the added feature of amended claim 13 of “*providing the*

correction factor as a feedback signal that is a function of the third intermediate signal.” Thus, both Blackmer and Smith fail to disclose or suggest this added feature of amended claim 13. As result, Blackmer and Smith are not properly combinable to render amended claim 13 obvious. Therefore, it is respectfully requested that amended claim 13 is in condition for allowance and should be passed to issuance.

Claims 14-21

It is respectfully submitted that the rejection of these claims is moot, since these claims each depend directly or indirectly from amended claim 13, which is patentable for at least the reasons set forth above.

Claim 24

Amended claim 24 recites a circuit for processing an input audio signal received at an input of the circuit to provide at an output of the circuit a processed audio signal. The circuit includes:

a first function generator having an input connected to a control output of the first nonlinear circuit, and an output connected to the second input of the multiplier, where the first function generator provides a feedback signal representative of a correction factor to the second input of the multiplier, and where the feedback signal is a function of a signal at the control output of the first nonlinear circuit.” (cl. 24, emphasis added).

Claim 24 has been amended to include the features of “*where the first function generator provides a feedback signal representative of a correction factor to the second input of the multiplier, and where the feedback signal is a function of a signal at the control output of the first nonlinear circuit.”* Support for this amendment is in the specification and drawings as filed.

(See, for example, each of FIGs. 1-4). It is respectfully submitted that nowhere in Blackmer or Smith is there disclosure or suggestion of these added features in amended claim 24.

Upon a fair and proper reading, Blackmer fails to disclose the added features of amended claim 24 of “*where the first function generator provides a feedback signal representative of a correction factor to the second input of the multiplier, and where the feedback signal is a function of a signal at the control output of the first nonlinear circuit.*” Blackmer instead discloses that the function generator (control amplifier) 50 is part of a qualification circuit 26 that also includes a high-pass filter 44, a level detector 46, and a non-linear capacitor 48 all connected in series. The output of a low-pass filter 38 is provided at an input of the qualification circuit 26, and the output of the qualification circuit is provided at the output of the control amplifier 50 and on to the gain control device 24. (See FIG. 2 of Blackmer). Thus, this qualification circuit 26 is providing a feed-forward signal and not a feedback signal. In addition, this feed-forward signal is not a function of a signal at the control output of the first nonlinear circuit. Thus, Blackmer fails to disclose or suggest the added features of amended claim 24 of “*where the first function generator provides a feedback signal representative of a correction factor to the second input of the multiplier, and where the feedback signal is a function of a signal at the control output of the first nonlinear circuit.*”

Notwithstanding the foregoing, the Official Action further contends that “*Blackmer does not expressly disclose the use of the non-linear circuit and function generator.*” (Official Action, pg. 8). The Official Action then contends that “*Smith discloses a nonlinear circuit limiting to a specified maximum the amplitude of a signal presented at the nonlinear circuit input (column 2 lines 22-29, figure 3) and a function generator (22, gain function of figure 3) having an input connected to a control output of said first nonlinear circuit, and an output connected to a*

multiplier input.” (Official Action, pg. 8). The Official Action then concludes that “*it would have been obvious to a person of ordinary skill in the art to replace the non-linear circuit of Blackmer with the limiter of Smith.*” (Official Action, pg. 8).

Upon a fair and proper reading, Smith fails to disclose the added features of amended claim 24 “*where the first function generator provides a feedback signal representative of a correction factor to the second input of the multiplier, and where the feedback signal is a function of a signal at the control output of the first nonlinear circuit.*” Instead, Smith, in the cited section of column 2, lines 22-29, merely discloses the limiter 22 and its function of reducing or attenuating the amplifier input signal to substantially avoid clipping of the output signal peaks, caused by the overloading of the amplifier. Further, FIG. 3 of Smith merely illustrates a gain chart where the gain is limited to a certain maximum value. As such, this disclosure in Smith is very different from and simply fails to disclose or suggest the added features of amended claim 24 of “*where the first function generator provides a feedback signal representative of a correction factor to the second input of the multiplier, and where the feedback signal is a function of a signal at the control output of the first nonlinear circuit.*”

In sum, neither Blackmer nor Smith discloses or suggests the added features of amended claim 24 “*where the first function generator provides a feedback signal representative of a correction factor to the second input of the multiplier, and where the feedback signal is a function of a signal at the control output of the first nonlinear circuit.*” Due to this failure of either reference to disclose or suggest these specific features, Blackmer and Smith are not properly combinable to render amended claim 24 obvious. Thus, it is respectfully requested that amended claim 24 is in condition for allowance and should be passed to issuance.

Claims 25-26

It is respectfully submitted that the rejection of these claims is moot, since these claims each depend directly from amended claim 24, which is patentable for at least the reasons set forth above.

Claim 29

Amended claim 29 recites a circuit for processing an input audio signal received at an input of the circuit to provide at an output of the circuit a processed audio signal. The circuit includes:

“means for band-limiting the received audio signal to generate a first intermediate signal;
means for multiplying the first intermediate signal by a correction factor to generate a second intermediate signal;
means for amplifying the second intermediate signal by an amplification factor to generate a third intermediate signal;
means for limiting the amplitude of the third intermediate signal to a predetermined value to generate a fourth intermediate signal;
means for providing the correction factor as a feedback signal that is a function of the third intermediate signal;
means for band-limiting the fourth intermediate signal to generate a fifth intermediate signal; and
means for adding the fifth intermediate signal to the received audio signal.” (cl. 29, emphasis added).

Claim 29 has been amended to include the feature of “*means for providing the correction factor as a feedback signal that is a function of the third intermediate signal.*” Support for this amendment is in the specification and drawings as filed. (See, for example, each of FIGs. 1-4). It is respectfully submitted that nowhere in Blackmer or Smith is there disclosure or suggestion of this feature.

Upon a fair and proper reading (and similar to the discussion hereinabove with respect to amended claim 13), Blackmer (FIG. 2) discloses that the third intermediate signal is generated by amplifying the second intermediate signal by an amplification factor. The third intermediate signal is then band-limited to generate a fourth intermediate signal. In addition, in Blackmer (FIG. 2) a feed-forward (and not a feedback) connection exists from the output of the low-pass filter 38, through a series connection of a high-pass filter 44, a level detector 46, a non-linear capacitor 48, and a control amplifier 50, then on to the gain control device 24. However, this is very different from the added feature of amended claim 29; specifically, of “*means for providing the correction factor as a feedback signal that is a function of the third intermediate signal.*” As Blackmer does not disclose a feedback signal, Blackmer also does not disclose a feedback signal that is a function of the third intermediate signal. Further, upon a fair and proper reading, Smith also fails to disclose or suggest in any manner whatsoever the added feature of amended claim 29 of “*means for providing the correction factor as a feedback signal that is a function of the third intermediate signal.*” Thus, both Blackmer and Smith fail to disclose or suggest this added feature of amended claim 29. As result, Blackmer and Smith are not properly combinable to render amended claim 29 obvious. Therefore, it is respectfully requested that amended claim 29 is in condition for allowance and should be passed to issuance.

Claims 30-31

It is respectfully submitted that the rejection of these claims is moot, since these claims each depend directly or indirectly from amended claim 29, which is patentable for at least the reasons set forth above.

Claim 32

Amended claim 32 recites a circuit for processing an input audio signal received at an input of the circuit to provide at an output of the circuit a processed audio signal. The circuit includes:

“a first conductive path through which the received audio signal travels; a second conductive path through which the received audio signal travels, where the audio signal is processed such that harmonics of the signal components with a low-frequency are generated in the second conductive path and are admixed to the signal in the first path, where in the second path the audio signal is sequentially bandpass filtered, weighted with a correction factor, amplified, limited to a predetermined value, and bandpass filtered, where the correction factor is reduced when the predetermined value is exceeded, and where the correction factor is provided as a feedback signal that is a function of the amplified audio signal.” (cl. 32, emphasis added).

Claim 32 has been amended to include the feature of “*where the correction factor is provided as a feedback signal that is a function of the amplified audio signal.*” Support for this amendment is in the specification and drawings as filed. (See, for example, each of FIGs. 1-4). It is respectfully submitted that nowhere in Blackmer or Smith is there disclosure or suggestion of this added feature of providing the correction factor as a feedback signal that is a function of the amplified audio signal.

Upon a fair and proper reading (and similar to the discussion hereinabove with respect to amended claims 13 and 29), Blackmer discloses that a feed-forward (and not a feedback) connection exists from the output of the low-pass filter 38, through a series connection of a high-pass filter 44, a level detector 46, a non-linear capacitor 48, and a control amplifier 50, then on to the gain control device 24. However, this is very different from the added feature of amended claim 32; specifically, of “*where the correction factor is provided as a feedback signal that is a function of the amplified audio signal.*” As Blackmer does not disclose a feedback signal,

Blackmer also does not disclose a feedback signal that is a function of the amplified audio signal. Further, upon a fair and proper reading, Smith also fails to disclose or suggest in any manner whatsoever the added feature of amended claim 32 of "*means for providing the correction factor as a feedback signal that is a function of the amplified audio signal.*" Thus, both Blackmer and Smith fail to disclose or suggest this added feature of amended claim 32. As result, Blackmer and Smith are not properly combinable to render amended claim 32 obvious. Therefore, it is respectfully requested that amended claim 32 is in condition for allowance and should be passed to issuance.

21-22. The indication of allowability of claims 22-23 and 27-28 is hereby noted and appreciated.

For all the foregoing reasons, reconsideration and allowance of claims 13-32 are hereby respectfully requested.

If a telephone interview could assist in the prosecution of this application, please call the undersigned attorney.

Respectfully submitted,



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IN THE DRAWINGS:

The attached sheets of drawings include changes to FIGs. 1-4. These sheets replace the original sheets that included FIGs. 1-4.